REMARKS

This application, and specifically, pending claims 1-13, has been carefully considered in connection with the Examiner's Action. Reconsideration, and allowance of the application, is respectfully requested.

Rejection under 35 U.S.C. § 102

Claims 6 and 8-13 were rejected under 35 U.S.C. § 102(b) as being unpatentable in view of US Patent No. 6.078,699 to Lobregt, et al. (Lobregt). The Examiner asserts that Lobregt discloses x-ray source and detector for producing digital x-rays, and a processor to respond to pairs of overlapping x-ray images, and configured to perform the method of claim 1 (Lobregt, col. 4, l. 58-col. 5, l. 5).

Applicants respectfully disagree.

Claim 1

Applicants' claim 1 recites a method for merging a pair of overlapping two-dimensional (2D) images, wherein the images comprise projections of a single three-dimensional (3D) scene, said method comprising: selecting at least four feature points in the 3D scene, finding 2D coordinates of points in both images corresponding to the selected feature points, the 2D coordinates being found with respect to original coordinate systems in the two images, translating the original coordinate systems of the two images to substantially minimize average coordinate ranges of the 2D coordinates found, determining parameters of a substantially optimal projective transformation relating corresponding translated coordinates in the two images, determining parameters of the projective transformation for application in the non-translated original coordinate systems of the two images by altering the projective transformation parameters in the translated coordinate systems using translation vectors that ensure

an equivalence of the projective transformation in the original and translated coordinate systems is true, and merging the two images into a composite image by transforming one image according to the projective transformation into a transformed image and combining the transformed image with the other image.

Claim 11 depends from independent claim 1.

Lobregt, col. 4, l. 58-col. 5, l. 5, teaches an image processing method implemented in an image processing system which derives first and second shift values, to forms combined portions from portions of successive sub-images, to distort a combined portion and form the composite image by merging on the basis of the distorted combined first portion and the combined second portion.

The object of Lobregt is to provide a method of composing an image from sub-images, in which disturbances in the composite image due to merging of the sub-images are counteracted better than in the known prior art.

Lobregt does not show each of the elements of applicants' independent claim 1, or equivalents, and therefore, and with all due respect, anticipate claim 1. Because claim 11 depends from claim 1, Lobregt cannot anticipate claim 11.

More particularly, Lobregt does not show, teach or even suggest a method for merging a pair of overlapping two-dimensional (2D) images, wherein the images comprise projections of a single three-dimensional (3D) scene. Nowhere does Lobregt mention selecting at least four feature points in the 3D scene, finding 2D coordinates of points in both images corresponding to the selected feature points, the 2D coordinates being found with respect to original coordinate systems in the two images, translating the original coordinate systems of the two images to substantially minimize average

coordinate ranges of the 2D coordinates found, determining parameters of a substantially optimal projective transformation relating corresponding translated coordinates in the two images, determining parameters of the projective transformation for application in the non-translated original coordinate systems of the two images by altering the projective transformation parameters in the translated coordinate systems using translation vectors that ensure an equivalence of the projective transformation in the original and translated coordinate systems is true, and merging the two images into a composite image by transforming one image according to the projective transformation into a transformed image and combining the transformed image with the other image. Nor does Lobregt show, teach or suggest an x-ray apparatus with a processor for carrying out the method, as set forth in claim 11.

Accordingly, applicants respectfully assert that claim 11 is not anticipated under 102(e) by Lobregt, nor claims 12 and 13 which depend therefrom, for at least the reasons set forth above for the patentability of applicants' sole independent claim 1. Moreover, because claims 6 and 8-10 depend from claim1, applicants further assert that claims 6 and 8-10 cannot be anticipated by Lobregt under 102(e) for at least the same reasons asserted for the patentability of claim 1. Accordingly, applicants respectfully request that the rejection of claims 6 and 8-13 under 102(e) in view of Lobregt be withdrawn.

Rejection under 35 U.S.C. § 103

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Lobregt as applied to claim 6 under section 102, and further in view of US Patent No. 6,535,650 to Poulo et al. (Poulo).

Applicants respectfully disagree. Claim 7 is dependent from claims 6/1, and is

patentable in view Lobregt for at least the reasons set forth above for the patentability of claim 1. Accordingly, applicants respectfully request that the rejection of claim 7 under 103(a) in view of the Lobregt/Poulo combination be withdrawn.

Claims 1-3 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schultz at al. in view of US Patent No. 6,504,569 to Jasinschi, et al. (Jasinschi), and further in view of US Patent No. 5,430,806 to Nettles.

Applicants respectfully disagree. While Schultz does teach a routine determination of a projective transformation of a plurality of pairs of corresponding points, and suggests some of the elements claimed by applicants, Schultz does not teach or suggest each of the elements of claim 1 but for the steps of translating and determining parameters of the projective transformation, as suggested by the Examiner. But even assuming arguendo that Schultz does teach or suggest each of the elements of claim 1 but for the steps of translating and determining parameters of the projective transformation, as suggested by the Examiner, Jasinschi, at col. 6, lines 62-7 (nor elsewhere), teaches or suggests translating the original coordinate system of selected 2D feature points such that the average coordinate ranges of the feature points is substantially minimized. Jasinschi, at the cited text, appears to teach a step of calibrating to realize a more stabile estimation of an essential matrix. For that matter, there is nothing in either Schultz or Jasinschi to suggest combining the two references.

So while nothing is found in either reference to suggest their combination such that they can be combined for use under 103(a), even assuming the combination would still not realize an invention of applicants' claim 1 but for the step of determining parameters of the projective transformation.

For that matter, applicants have carefully studies Nettles at col. 3, lines 21-37, and do not see that Nettles teaches determining parameters of the projective transformation, as applicants step sets forth in detail, nor translating an original coordinate system prior to performing transformation, and then translating the coordinate system back to its original state so that the transformation cab be applies in the original non-translated coordinate system. Nettles teaches resampling data to realize new matrices, not determining parameters of the projective transformation for application in the non-translated original coordinate systems of the two images by altering the projective transformation parameters in the translated coordinate systems using translation vectors that ensure an equivalence of the projective transformation in the original and translated coordinate systems is true.

Further, there is nothing in any of the three references which would suggest their combination to address the problem addressed by applicants' independent claim 1 invention. Accordingly applicants respectfully assert that claim 1, is not obvious under 35 USC § 103(a) by Schultz in view of Jasinschi and further in view of Nettles, and respectfully requests withdrawal of the rejection to claim 1 under 103(a) in view of the improper combination. Applicants further assert that claims 2, 3 and 5 , which depend from claim 1, are also non obvious under 35 USC § 103(a) by Schultz in view of Jasinschi and further in view of Nettles, and respectfully requests withdrawal of the rejection to claims 2, 3 and 5 under 103(a) in view of the improper combination, for at least the reasons set forth above with respect to the patentability of claim 1.

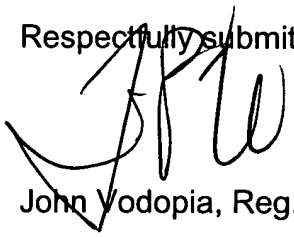
Claim 4 was also rejected under 35 USC 103(a) as unpatentable over the combination of Schultz, Jasinschi and Nettles, and further in view of "singular value decomposition". However, because claim 4 depends from claim 1, and applicants believe strongly in the patentability of claim 1 in view of the Schultz, Jasinschi and Nettles combination, applicant does not address the merit of adding "singular value

decomposition" to the combination. That is, because claim 1 is not obvious under 35 USC § 103(a) by Schultz in view of Jasinschi and further in view of Nettles as combined, and in view of the improper combination, adding the "singular value decomposition" to the combination does nothing to remedy the failure of the combination of the three references. Hence, applicants respectfully assert that claim 4 is non obvious under 35 USC § 103(a) by Schultz in view of Jasinschi and further in view of Nettles and still further in view of "singular value decomposition", and respectfully requests withdrawal of the rejection to claim 4 under 103(a), whether combined or in view of the improper combination, for at least the reasons set forth above with respect to the patentability of claim 1.

Conclusion

An early formal notice of allowance of claims 1-13 is requested.

Respectfully submitted,



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